

-22-

5

## ABSTRACT

Adding at least one gene involved in plant host cell T-DNA integration enhances transformation by *Agrobacterium*. The histone H2A gene encoded by the *Arabidopsis* RAT5 gene increases transformation frequencies of plants, most likely by causing overexpression of a product needed for T-DNA integration. *Agrobacterium* *tumefaciens* genetically transforms plant cells by transferring a portion of the bacterial Ti-plasmid, designated the T-DNA, to the plant, and integrating the T-DNA into the plant genome. However, not all plants are transformable by *Agrobacterium* and transformation frequencies may be too low to be useful. Little is known about the T-DNA integration process, and no plant genes involved in integration have been identified prior to the present invention.

10

15